REMARKS:

Reconsideration and allowance in view of the foregoing amendments and the following remarks are requested. By this amendment, Applicants have amended claims 1, 2 and 6, cancelled claim 5, and added new claims 34-43. No new matter is added.

Response to Rejections under 35 U.S.C. § 102

Claims 1-33 remained rejected under 35 U.S.C. § 102(b) as being anticipated by Chetverin et al. (U.S. 6,322,971). The Examiner has interpreted the present claims to only require that a complementary copy of a specified copy be produced, rather than requiring a complete copy of a particular sequence be produced. Accordingly, the Examiner asserts that in Figure 5B of Chetverin, immobilized strand 33 represents the starting template from which a complementary copy is produced using primer 17, which, even if it is a partial copy of a parental strand, the immobilized strand represents the specified sequence with respect to the claims. The Examiner further states that Chetverin discloses that specified sequences bound to the partialing array may "be stored and reused at later time for the generation of additional copies of the complete set of partials, or for generation of additional copies of the partials contained in selected wells" (column 25, lines 29-34). The Examiner has interpreted this section of Chetverin as disclosing that such copies of the partials may be "selected" or "specified" for producing complementary copies. The Examiner further contends that Chetverin discloses that the partials may be used for sequencing wherein partials are used whose sequences are already known (column 25, lines 56-60), and partials may be prepared from parental strands whose sequence has been previously been determined (column

26, lines 18-19). Thus, the Examiner asserts that the sequences used for generating complementary copies of a nucleic acid may be sequences that are known, not just in a priming region, but along the entire length of the partial.

With regard to claim 2, the Examiner asserts that Chetverin teaches that sequences bound to the support or partialing array may be known sequences generated from parental sequences that are also known, having been previously sequenced (column 26, lines 18-19). The Examiner asserts that Chetverin discloses that the partial sequences used to generate complementary copies or double stranded copies are known sequences, and may be selected by a user, such as from an array that is stored for future use in producing complementary copies (column 25, lines 29-34).

Applicants submit that, as amended, the present claims are not anticipated by Chetverin. Claims 1 and 2 have been amended to require that the nucleic acid fragments on the support surface are **in-situ synthesized**, which further distinguishes the presently claimed method from Chetverin because Chetverin uses an array that was obtained by immobilizing prefabricated nucleotide sequences, e.g., a nucleic acid sample. Written description support for this amendment can be found on page 12, lines 16-20 and in original claim 5, which has now been cancelled in view of the incorporation of this subject matter into claim 1. No new matter has been added. Applicants disagree with the Examiner's assertion on page 6 of the Office Action that Chetverin discloses that the nucleic acid fragment on the surface of the support, i.e., the fragment to be copied, was in-situ synthesized. The portion of Chetverin cited, col. 4, lines 13-16, explains that reactions occurring in different wells are highly specific and are determined by the nucleotide sequence of the oligonucleotide immobilized on the surface, which

allows a number of amplifications to occur in parallel. Chetverin states that "[t]he areas have different oligonucleotides immobilized thereon." Col. 4, lines 8-9. There is no evidence that these support-bound oligonucleotides were in-situ synthesized. Rather, the disclosure of Chetverin is directed to providing a sectioned array having oligonucleotides bound thereon for parallel reactions without mixing the contents of the wells. Accordingly, there is no teaching or suggestion of in-situ synthesis of the support-bound oligonucleotides. For this reason alone, Applicants submit that claims 1 and 2, and dependent claims 3, 4, and 6-33, are not anticipated by Chetverin.

New claim 34 depends from claim 1 and further requires that the in-situ synthesized nucleic acid fragments on the support surface are **synthesized under software control**. Written description support for this subject matter can be found on page 12, lines 29-36. No new matter has been added. There is no teaching or suggestion in Chetverin of software control for in-situ synthesis of nucleic acid fragments on the support surface. Accordingly, Applicants submit that claim 34 is also distinguished from Chetverin for this additional reason.

Independent claims 1 and 2 have also been amended to require that the nucleic acid fragments are in-situ synthesized on the support to comprise a primer site proximal to the support. Written description support for this amendment can be found on page 18, lines 31-35. No new matter has been added. Applicants submit that there is no disclosure in Chetverin that teaches or suggests in-situ synthesizing nucleic acid fragments on a support by specifying base sequences chosen to be complementary to the specified sequences of nucleic acids to be prepared and **having a primer site that is proximal to the support**. Further, claims 1 and 2 have been amended to require

that **a primer complementary to the primer site that was in-situ synthesized in the fragment on the substrate be added** to bring about generation of complementary copies of the base sequences from (a). Written description support for this amendment can be found on page 9, lines 5-21. No new matter has been added. Applicants submit that Chetverin does not anticipate these steps because Chetverin does not suggest in-situ synthesis or specifying the primer site sequence and locating it proximal to the substrate. Accordingly, Applicants submit that independent claims 1 and 2, and dependent claims 3, 4, and 6-33, are not anticipated by Chetverin. Applicants respectfully request that the rejection of claims 1-4, and 6-33 be withdrawn.

With regard to claim 15, the Examiner asserts that Chetverin discloses that the nucleic acid fragments provided on the substrate in step (a) comprise a self-priming 3' end and that step (b) comprises elongation of the 3' end. Applicants respectfully disagree and submit that the portion of Chetverin cited by the Examiner, i.e., col. 38, lines 26-41, does not disclose or suggest the limitations of claim 15. Instead, the disclosure shows that Chetverin does not anticipate in-situ synthesis of the nucleic acid fragments on the support because Chetverin admits a problem with “recursive, or monotonous, regions that consist of perfect repeats of identical units comprised of one, two, three, or more nucleotides, such as ... AAAAAAAAA ... or ... ACACACACACAC.” Col. 38, lines 26-36 of Chetverin. Thus, Chetverin does not disclose in-situ synthesis of nucleic acid fragments that have a self-priming 3’ends, but rather states that, if the random oligonucleotide that is bound to the support has recursive or monotonous regions, there is going to be a problem in terms of ambiguity in the sequence of the resultant oligonucleotide that is formed. Accordingly, Applicants submit that the

Examiner has identified a "significant source of ambiguities when utilizing" the method of Chetverin that is avoided by the in-situ synthesized fragment in step (a) of the presently claimed invention. Therefore, Applicants submit that Chetverin does not anticipate the present method for the above reasons. Applicants respectfully request that the rejection of claim 15 be withdrawn.

New Claims

New claims 34-43 have been added to define further embodiments of the invention. Written description support for claim 34 can be found on page 12, lines 29-36. Written description support for claims 35-39 and 41-43 can be found in the paragraph bridging pages 18 and 19 and claim 1 as originally filed. No new matter has been added.

Written description support for claim 40 can be found in claims 1 and 15 as originally filed. No new matter has been added. Applicants submit that Chetverin does not anticipate claim 40 because Chetverin admits a problem with "recursive, or monotonous, regions that consist of perfect repeats of identical units comprised of one, two, three, or more nucleotides, such as ... AAAAAAAAA ... or ... ACACACACACAC." Col. 38, lines 26-36 of Chetverin. Thus, Chetverin does not disclose **in-situ synthesis of nucleic acid fragments that have a self-priming 3'ends**, but rather states that, if the random oligonucleotide that is bound to the support has recursive or monotonous regions, there is going to be a problem in terms of ambiguity in the sequence of the resultant oligonucleotide that is formed. Accordingly, Applicants submit that the method of Chetverin has a "significant source of ambiguities when utilizing" that is avoided by

the in-situ synthesized fragment in step (a) of the presently claimed invention. Therefore, Applicants submit that Chetverin does not anticipate the present method for the above reasons. Applicants respectfully request that the new independent claim 40 be indicated allowable.

Conclusions

In view of the above remarks, Applicants believe that all of the Examiner's rejections set forth in the June 25, 2010 Office Action have been fully overcome and that the present claims fully satisfy the patent statutes. Applicants, therefore, believe that the application is in condition for allowance.

The Director is authorized to charge any fees or overpayment to Deposit Account No. 02-2135.

The Examiner is invited to telephone the undersigned if it is deemed to expedite allowance of the application.

Respectfully submitted,

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